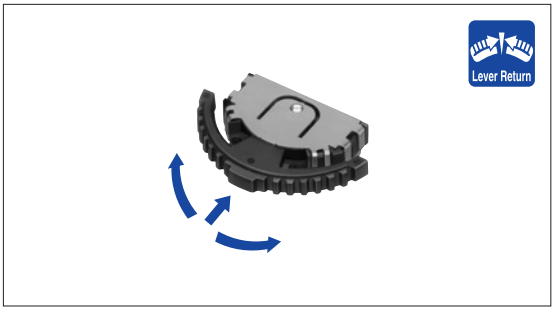
Lever and Push Operation Type Switch

SLLB5 Series

RoHS applicable

Compact two-way input device approximately 50% smaller than our conventional models.



Features

- On of the smallest two-way operation devices in the industry.
- The projected area is 50% smaller than our SLLB series (9.5×8.8×2.2mm).
- Reflow solderable.

Applications

- For menu selection/decision in mobile phones, personal digital assistants, portable audio devices and digital still cameras
- For DVD players/recorders, digital still cameras, flat panel TVs and notebook PCs

Typical Specifications

Items		Specifications
Rating (max.) / (min.) (Resistive load)		10mA 5V DC/50μA 3V DC
Contact resistance		1Ω max.
Operating force	Lever portion	0.65±0.3N
	Push portion	2.5±1N
Travel (Push operation)		0.7mm
Operating life		100,000cycles

Product Line

Actuator configuration	Push-on switch	Location lug	Minimum packing unit (pcs.)	Product No.	Drawing No.
Mounting knob integrated	With	With	1,500	SLLB510100	1
		Without		SLLB510200	
Mounting knob		With		SLLB520100	2
		Without		SLLB520200	

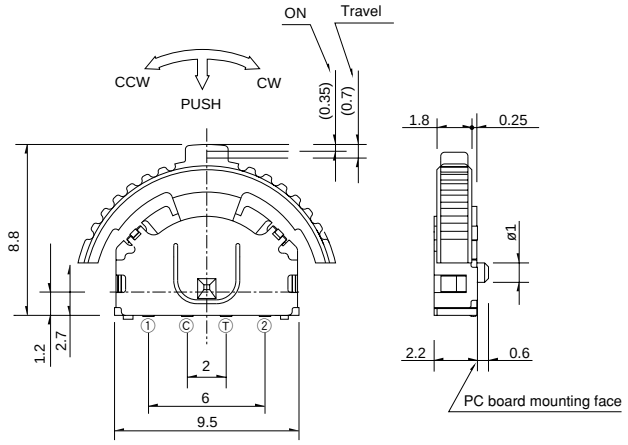
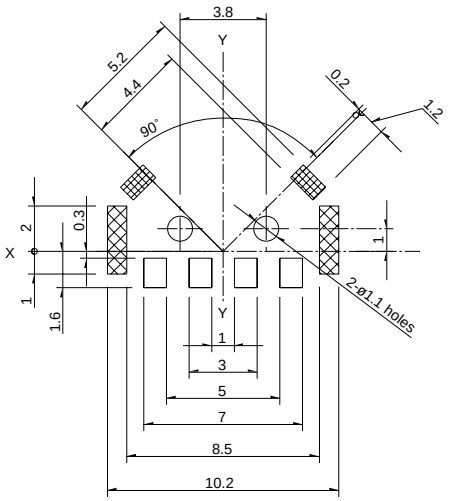
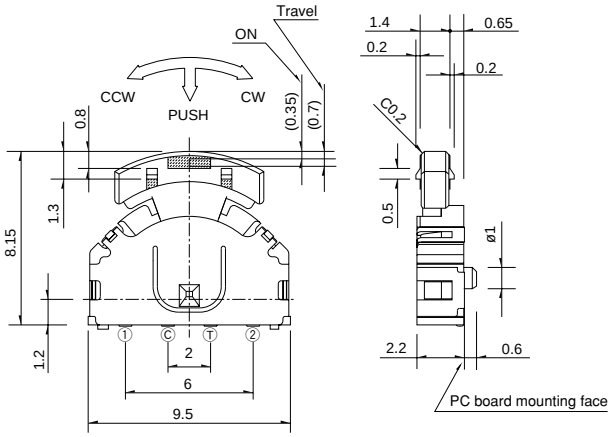
Notes

1. Products other than those listed in the above chart are also available. Please contact us for details.
2. Please contact us for automotive use products.

Refer to **P.310** for product specifications.
Refer to **P.311** for taping package specifications.

Dimensions

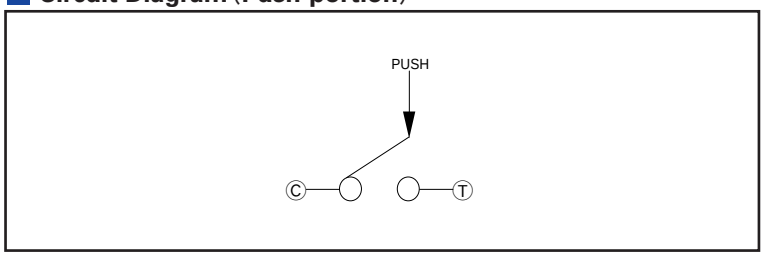
Unit:mm

No.	Style	PC board mounting hole and land dimensions
1	**Mounting knob integrated** 	
2	**Mounting knob** 	

Note

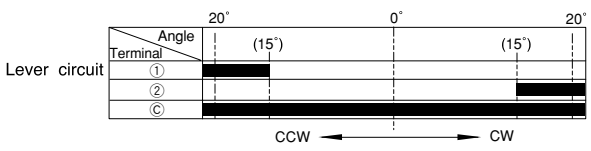
Above dimensions indicate locator pin configurations only.

Circuit Diagram (Push-portion)

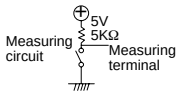


Code Table

Code table (■ = ON)



Product Specifications

Items			SKQU		SSAF	SRBE	SLLB ※	SLLB5 ※	SLLQ
			SKQUAA, SKQUBA	SKQUCA, SKQUDB					
Operating temperature range			–30℃ to +85℃		–10℃ to +60℃				–40℃ to +85℃
Rating (max.) (Resistive load)			50mA 12V DC		20mA 5V DC	1mA 5V DC	10mA 5V DC		
Electrical performance	Output voltage		———		1V max. at 1mA 5V DC (Resistive load) 				
	Directional resolution		4-direction		9-direction	———			
	Insulation resistance		100MΩ min. 100V DC		10MΩ min. 100V DC	50MΩ min. 50V DC	100MΩ min. 100V DC		
	Voltage proof		250V AC for 1minute		100V AC for 1minute	50V AC for 1minute	100V AC for 1minute		
Mechanical characteristics	Directional operating force		$1.57^{+0.49}_{-0.59}$N	$1.57^{+0.39}_{-0.69}$N	8-direction 0.5N $^{+0.5}_{-0.35}$ N	———	0.65±0.3N		1±0.5N
	Push operating force		—	3.14± 0.59N	2.5 $^{+0.7}_{-0.5}$ N	3.5±1.5N	2±1N	2.5±1N	1.6±1N 2.6±1N
	Encoder detent torque		———			3±2mN・m	———		
	Terminal strength		29.4N for 1minute	49N for 1minute	———		3N for 1minute		
	Actuator strength	Pushing direction	———		50N				30N
		Operating direction			50N	———	10N		
	Solder heat resistance	Manual soldering	350℃ max. 3s max.		350±10℃ 4 $^{+1}_{0}$s	350±5℃ 3s max.			
		Dip soldering	260℃ max. 5s max.		———				
		Reflow soldering	Please see P.311						
Endurance	Vibration		10 to 55 to 10Hz/min., the amplitude is 1.5mm for all the frequencies, in the 3 direction of X, Y and Z for 2 hours respectively						
	Operating life	Directional	50,000 cycles	100,000 cycles	500,000cycles	———		———	
		Center push				100,000cycles	———		
		Encorder			———				
	Operating life without load						100,000cycles	100,000cycles	
	Operating life with load (at rated load)								
Environmental test	Cold		–30±2℃ for 96h		–40±2℃ for 96h		–20±2℃for 96h		–40±2℃ for 96h
	Dry heat		80±2℃ for 96h		85±2℃ for 96h				
	Damp heat		60±2℃, 90 to 95%RH for 96h		40±2℃, 90 to 95%RH for 96h				

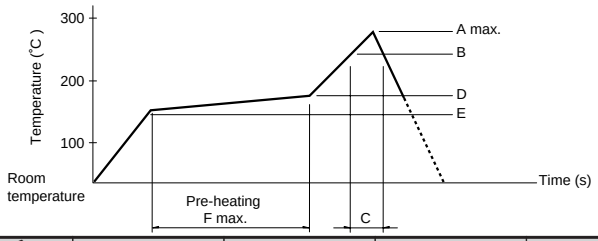
Notes

1. Shall be in accordance with individual specifications.
2. ※The operating temperature range for automotive applications can be raised upon request. Please contact us for requirements of this kind.

Soldering Conditions

Example of Reflow Soldering Condition

1. Heating method: Double heating method with infrared heater.
2. Temperature measurement: Thermocouple 0.1 to 0.2φ CA (K) or CC (T) at solder joints copper foil surface). A heat resistive tape should be used to fix thermocouple.
3. Temperature profile



Series(Reflow type)	A (°C) 3s max.	B (°C)	C (s)	D (°C)	E (°C)	F (s)
SLLB, SLLB5, SLLQ	240	230	20	150	150	120
RKJXS/SKRV/SKRH/SKQUBA,DB/SSAF/SRBE	260		40	180		

Notes

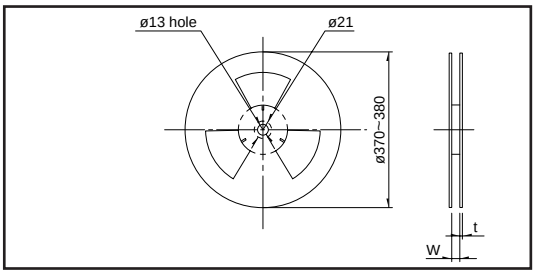
1. The above temperature shall be measured on the mounting surface of a PC board. There are cases where the PC board's temperature greatly differs from that of the switch, depending on the material, size thickness of PC boards and others. The above-stated conditions shall also apply to switch surface temperatures.
2. Soldering conditions differ depending on reflow soldering machines. Prior verification of soldering condition is highly recommended.

Taping Specifications

Unit:mm

Taping Packaging

Reel Size Unit:mm



Applicable series	Tape dimensions
SKRH, SKRV	∗1 ø1.5 hole, 2, 12, 4, 1.75, 7.5, 16, Pull direction
SKQUBA, SKQUDB	∗2 40, 4, 2, ø1.5, 1.75, 14.2, 28.4, 32, R0.75, 0.2, 16, 2, 4, 40, Pull direction

Series	Number of packages (pcs.)			Reel width W (mm)	Reel thickness t (mm)	Tape width (mm)	Tape dimensions
	1 reel	1 case (shipment within Japan)	1 case (shipment outside of Japan)				
SSAF	1,200	2,400	2,400	24.4	2	24	
SRBE	1,300	2,600	5,200	25.4	2	24	
SLLB	1,350	2,700	5,400	24.4	3	24	
SLLB5	1,500	3,000	6,000	24.4	3	24	
SLLQ11	900	1,800	3,600	24.4	3	24	
SLLQ12	1,400	2,800	5,600	24.4	3	24	
RKJXS	950	3,800	3,800	25.5	1.6 to 2	24	
SKRV	1,500	12,000	12,000	17.5	2	16	∗1
SKRH	1,300	10,400	10,400	17.5	2	16	
SKQUBA	750	3,000	3,000	33.5	2	32	∗2
SKQUDB	600	2,400	2,400	33.5	2	32	

Note

Please place purchase orders for taping products per minimum package units (1 reel or 1 case).